



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,683	07/24/2001	Gerrit Klaerner	SMX 3093.3	4375

321 7590 05/19/2003

SENNIGER POWERS LEAVITT AND ROEDEL  
ONE METROPOLITAN SQUARE  
16TH FLOOR  
ST LOUIS, MO 63102

EXAMINER

CEPERLEY, MARY

ART UNIT	PAPER NUMBER
----------	--------------

1641

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/911,683

Applicant(s)

KLAERNER ET AL.

Examiner

Mary (Molly) E. Ceperley

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 17-28 is/are pending in the application.
- 4a) Of the above claim(s) 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1641

**1)** Applicants are required to clarify the filing status of this application. This application is stated to be a divisional application of 09/609,461, but contains claims which are different from the claims in the parent application. Additionally, the Preliminary Amendment filed 28 February 2003 adds new matter to the claims (see paragraphs **6)** and **7)** below), thus indicating that this application should be designated as a continuation in part of the parent application.

**2)** Acknowledgment is made of applicants' election of Group V, claims 17-27, in Paper No. 5. The election was made **without** traverse and claims 1-16, drawn to non-elected inventions, have been canceled. Claim 28 is withdrawn from further consideration as being drawn to a non-elected invention. The sensor of claim 28 is the same as the sensor of claim 8 (non-elected Group IV). No traverse was made of the restriction between elected Group V and non-elected Group IV.

Claims 17-27 are treated on the merits in this Office action.

**3)** Although specific claims are cited in the rejections below, these rejections are also applicable to all other claims in which the noted problems/language occur.

**4)** The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**5)** Claims 17, 18, and 23-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way (enabling) as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification fails to define exactly what is meant by the variable "L". The following portions of the specification relate to the variable "L".

Art Unit: 1641

a) A description of the structure of claim 17 appears at page 39, line 10 of the specification:

"L,...are as defined herein".

b) The prior descriptions of the term "L" appear at page 26, lines 3-4:

"L is a linker group capable of bonding to at least one C moiety";

c) and page 26, lines 24-26 states:

"linkers have an end-group capable of binding to the surface of the substrate, and may be selected from the group consisting of substituted alkyl, heteroalkyl and polyethylene glycol".

d) Page 91, *1- Synthesis of the initiator*, provides an enabling disclosure for "L" defined as Si for a specific compound as defined in claim 19. {It is noted that page 91, *3- Synthesis of polymer brushes*, does not describe the addition of any "monomer" which would apparently be required to obtain "Monomer conversion in solution" as described in the table of page 92.}

e) Page 27, lines 3-7 "in a particularly preferred embodiment, wherein Si or a SiO<sub>2</sub> based surface are (sic) used..., it is especially desirable for the linker group to *include* a silicon atom" (no indication of what other moieties are meant to be "included").

Other than for the definitions c) and d), the specification provides no enabling written description of the structural/chemical requirements of the moiety "L" which could include moieties as diverse as metal containing macrocycles and reactive acetylene linkages which would not be useful for the stated purpose of the invention.

**6)** Claims 17-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Preliminary Amendment of 28 February 2003 adds new matter to the claims which was not described in the specification as originally filed. Specifically, there is no description in the specification of the method of

Art Unit: 1641

claim 17 which uses the specific monomer reagent combinations recited in the claim (see the first full paragraph below the structure of page 2 of the 28 February 2003 amendment).

**7)** Claims 17-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The variable "Y" is defined at page 5, lines 13-14 of the specification as "a residue capable of initiating free radical polymerization upon homolytic cleavage of the Y-S bond". There is no description of the claim 17 definition of "Y" as "a residue capable of initiating free radical polymerization upon UV initiated cleavage of the Y-S bond".

**8)** The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**9)** Claims 17-27 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **a)** claims 92, 102-104, and 107 of copending Application No. 09/609,461 and as being unpatentable over **b)** claims 85-91 and 94-101 of copending Application No. 10/043,394. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of 09/609,461 and 10/043,394 encompass the method recited in the claims of the instant application.

Art Unit: 1641

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

**10)** The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**11)** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**12)** Claims 17 and 18 are rejected under 35 U.S.C. 102(a) as being anticipated by Nakayama et al (ref. 126 of PTO-1449). Nakayama et al describe the method of claim 17 wherein a benzyl *N,N*-diethyldithiocarbamate (corresponds to the structure of claim 17) is UV irradiated, polymerized with an acrylic acid based monomer and attached to a surface (see Scheme 1. Reaction Mechanism of Block Copolymerization Using Benzyl *N,N*-Diethyldithiocarbamate). The functional groups on the polymeric moiety of the attached structure are further reacted with a protein (corresponds to "a probe selective for the biological molecule"); see page 5566, the paragraph bridging the first and second columns and the first full paragraph of the second column.

Art Unit: 1641

**13)** Claims 17-27 are rejected under 35 U.S.C. 103(a) as obvious over de Boer et al (ref. 82 of form PTO-1449) taken in combination with Sundberg et al (ref. 33 of form PTO-1449).

De Boer et al describe the instantly claimed method of attaching *N,N*-(Diethylamino)dithiocarbamoylbenzyl(trimethoxy) silane to a silicon substrate coupled with the further "living" free radical photopolymerization using acrylic acid based monomer, as claimed (see Scheme 1. and Experimental Section). The reference does not specifically describe the attachment of biomolecules to the functional groups on the conjugate but does describe the method as providing "functional surfaces" (page 355, the paragraph before the Acknowledgment).

Sundberg et al describe functionalized surfaces with polymeric elongating groups which are similar to the surfaces of De Boer et al in which biomolecules are attached to the available functional groups. See Fig. 1 and 2; col. 4, lines 49-56; col. 15, lines 16-25; col. 15, line 59-col. 16, line 27.

In view of the fact that both de Boer et al and Sundberg et al are directed to functionalized surfaces useful in biological applications, it would be obvious to attach biomolecules as described by Sundberg et al to the functional groups of the de Boer et al functionalized surfaces, as claimed, with the expectation of obtaining a product useful in biological applications, for example, ligand binding as described by Sundberg et al.

**14)** Claims 17, 18, 24 and 25 are rejected under 35 U.S.C. 103 as being obvious over Nakayama et al (ref. 125 of form PTO-1449) taken in combination with Sundberg et al (ref. 33 of form PTO-1449).

Nakayama et al describe the claimed method of reacting a benzyl *N,N*-diethyldithiocarbamyl group-immobilized polymer surface with an acrylamide polymer. See the Abstract; Scheme 1. Nakayama et al also further describe these derivatized surfaces as being appropriate for "microbiosensors", the term "microbiosensors" implying that a biomolecule is attached (first paragraph under the Introduction; the last paragraph of page 8629).

Art Unit: 1641

Sundberg et al describe functionalized surfaces with polymeric elongating groups which are similar to the surfaces of Nakayama et al in which biomolecules are attached to the available functional groups. See Fig. 1 and 2; col. 4, lines 49-56; col. 15, lines 16-25; col. 15, line 59-col. 16, line 27.

In view of the fact that both Nakayama et al and Sundberg et al are directed to functionalized surfaces useful in biological applications, it would be obvious to attach biomolecules as described by Sundberg et al to the functional groups of the Nakayama et al functionalized surfaces, as claimed, with the expectation of obtaining a product useful in biological applications, for example, ligand binding as described by Sundberg et al.

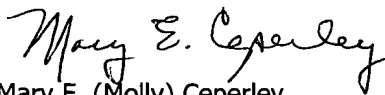
**15)** References 96, 112, and 124 of form PTO-1449 and Ward et al (reference <sup>u</sup>~~R~~ of form PTO-892) are noted as being closely related to the claimed invention.

**16)** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary E. (Molly) Ceperley whose telephone number is (703) 308-4239. The examiner can normally be reached from 8 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le, can be reached at (703) 305-3399. The fax phone number for responses to be filed BEFORE final rejection is (703) 872-9306. The fax phone number for responses to be filed AFTER final rejection is (703) 872-9307.

Questions which are NOT RELATED TO THE EXAMINATION ON THE MERITS, should be directed to **TC 1600 CUSTOMER SERVICE** at **(703) 308-0198**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

May 16, 2003

  
Mary E. (Molly) Ceperley  
Primary Examiner  
Art Unit 1641